

Lunabotics 2022

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FAQ's – Rev 15 – dtd 05.15.2022

[FAQ 82 REPLACES FAQ 78](#)

82: Silica Inhalation Mitigation

Silica Inhalation Mitigation Ver 2.0 dtd 05.12.2022

The Center for Space Education Bldg. M6-306

May 22 – May 28, 2022

1. N-95 masks are recommended inside The Center for Space Education Bldg. M6-306 in the following areas:
 1. Artemis Arena Room 9020, 9030
2. N-95 masks are **REQUIRED** for any students who may be inside the following areas:
 1. Artemis Mining Arena Room 9010
3. *Facial Hair*
 1. Volunteers and students who wear N-95 masks shall be clean shaven.
 2. According to the National Institute for Occupational Safety and Health (NIOSH), that facial hair growing in or protruding into the area of the primary sealing surfaces of the respirator will prevent a good seal, and that workers should not enter a contaminated work area when conditions prevent a good seal of the respirator facepiece to the face. For this reason, only clean-shaven individuals wearing who wear N-95 masks or other tight-fitting respirators will be allowed entry into the Artemis Mining Arena Room 9010 during the competition.
4. Remember this is an evolving situation, policies may change as new data becomes available. Be flexible.
5. Teams are advised to provide N-95 masks for their teams as required.

~ end of FAQ 82 ~

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FAQ's – Rev 14 – dtd 05.10.2022

81. Media Advisory

MEDIA ADVISORY

"All visitors to NASA's Lunabotics Challenge events at the Kennedy Space Center give permission to be photographed/videotaped by NASA or its representatives for potential use in future media products, unconditionally releasing NASA and its representatives from any claims and demands."

80Q: As an alternative can the team members bring individual lunch boxes with food and beverages and be able pass them through security at the main visitor's gate?

80A: Yes!

79Q: Can teams bring in an ice chest with food and beverages to the site?

79A: No.

[FAQ 82 HAS REPLACED FAQ 78](#)

~~78: Silica Inhalation Mitigation~~

Lunabotics 2022

Silica Inhalation Mitigation Ver 1.0 dtd 05.11.2022

The Center for Space Education Bldg. M6-306

May 22 — May 28, 2022

- ~~1. N-95 masks are required inside The Center for Space Education Bldg. M6-306 in the following areas:
 - ~~1. Artemis Arena Room 9020, 9030~~
 - ~~2. RoboPit Room~~~~
- ~~2. Hooded powered air purifying respirator (PAPR) is required inside the following areas:
 - ~~1. Artemis Mining Arena Room 9010~~~~
- ~~3. Without exception, the use of any respirator (N-95 masks and/or tight-fitting negative pressure respirators, etc.) shall require no facial hair be in contact with any part of the mask/respirator in order to maintain the seal. Address any safety concerns to the RoboPit Chief immediately.~~
- ~~4. There is no waiver to this requirement.~~
- ~~5. This is an evolving situation, thank you for your patience.~~

~~—end—~~

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FAQ's – Rev 13 – dtd 05.09.2022

77: CHANGE TO RULE 10.2.3

10.2.3 ON-SITE COMPETITION WEEK

Check-Out Robots and Equipment

There will be one security sweep at check-in on Sunday May 22 and there will be one security sweep on Wednesday May 25. You cannot remove your robots/equipment and check them back in the next day. Once removed, the robots and equipment stay removed from the competition.

76. CHANGES TO RULE 10.1

10.1 HOURS OF OPERATION

The hours of operation are changed for the RoboPits and the BotShop as follows –

FROM:

RoboPits	Open	Close
	7:00A	6:00P
Bot-Shop	Open	Close
	9:00A	5:00P

TO:

RoboPits	Open	Close
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	7:00A	6:30P
Bot-Shop	Open	Close
	9:00A	3:00P

75Q: Regarding sections 7.2.6 and 8.1.3: If the team uses beacons, attached to the collection sieve, as a navigational aid, does the team need to record power consumed by the beacons?

75A: The power consumed by beacons attached to the collection sieve does not have to be recorded.

74Q: In section 8.4 of the LUNABOTICS Guidebook, the graphic of the collector sieve shows a large sign below the sieve. However, in sections 8.1 and 8.2, the graphics of the collection sieve show no sign attached. Will there be signage attached to the collection sieve?

74A: No.

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FAQ's – Rev 12 – dtd 04.19.2022

73Q: Our team noticed that the rule book recommends a COTS electric power data logger, and we want to know if this is absolutely required?

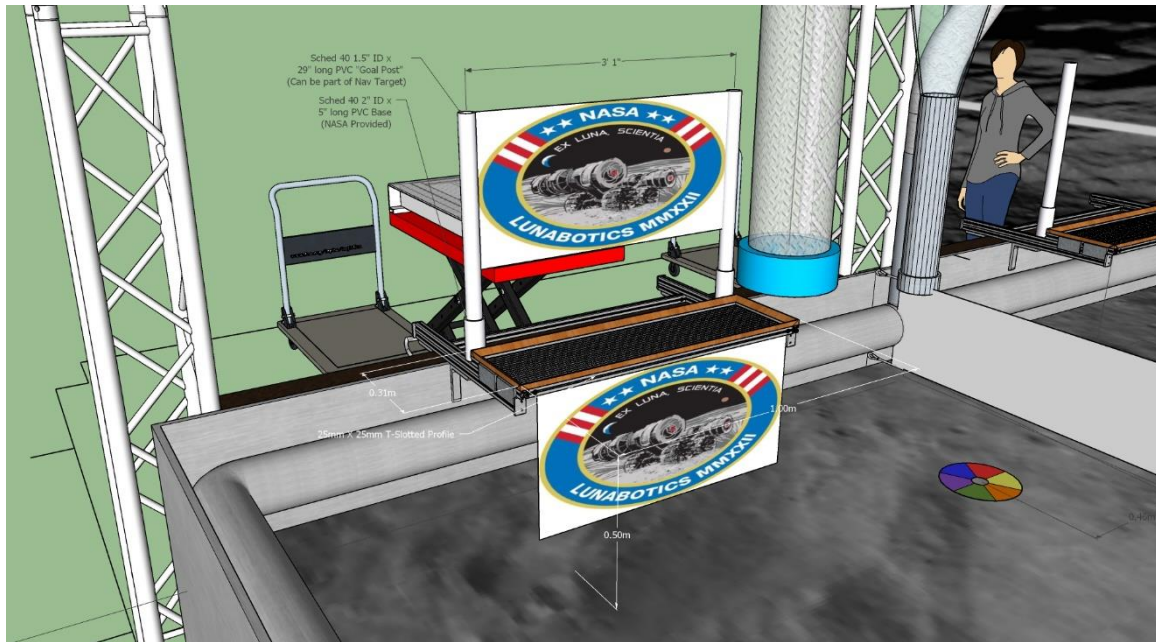
73A: Yes, it is required.

71Q: In reference to section 8.4 and an answer from Rob Mueller during last week's webinar regarding teams needing to remove the walls from a Lidar's pointcloud scan to prevent teams from relying unjustly on the walls at competition for navigation. As our navigation is currently set up, the robot will see the walls. However, the robot navigation would operate even if walls were not present (i.e. a lunar environment). Is this allowed? And if not, how can a robot autonomously navigate without a map of its environment?

71A: The team must prove to the judges that the software is not using the walls. The judges will interview the team at the competition to verify compliance.

70Q: Rulebook section 8.4.2 says "The navigational aid system may not be higher than 0.25 m above the sieve frame." But section 8.4.5 says "Students can bring their own 1.5" (ID) schedule 40 PVC tubes (vertical uprights) 29" long "goal posts" integrated into their nav targets as long as 5 inch is clear at the bottom to insert in the 2" x 5" high base PVC pieces." The figure in section 8.4 also shows a banner attached to the sieve which appears to be >0.25m. Is the height limit for the nav target above the collection 0.25 m or the 29" length of the vertical uprights? Also, is there a limit for how far the nav target beneath the sieve can extend downwards?

70A: See the attached image. Since we are using standard schedule 40 PVC tubes to construct the nav target goal posts, inches are indicated for goal post dimensions. PVC dimensions using English units are common in U.S. All dimensions are correct. The 29" PVC posts sit inside the 5" PVC base sections. Therefore, the posts stick up 24" above the base sections. The posts are 37" apart. Teams can create nav targets that span that distance and are up to 24" high as long as the nav target is light weight like plastic sheet or poster foam board, etc. Teams can even prebuild the PVC posts into their nav targets and bring them. If they use standard schedule 40, 1.5" ID PVC plumbing pipes, max 29" long, with at least 5 inches sticking out on the bottom to fit in the PVC bases, then they can use that. Regarding the allowable nav target size if teams want to attach it to the front of the 80/20 target sieve, the attached image shows the sieve width and the distance above the regolith. Incidental contact with the regolith at the bottom of the target is not a problem.



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FAQ's – Rev 11 – 02.15.2022

69Q: Do the five people allowed in the RoboPits and Artemis Arena need to be the same five people throughout the entire competition?

69A: No.

68Q: For example, can one set of five people attend the first day's competition and another set of five attend the second day's?

68A: Yes!

67Q: Could people switch out as needed throughout the competition day to be in the building, as long as only five total people per team are in the building at once?

A: Yes!

66Q: Is the event live-streamed or recorded?

66A: We don't know at this time. We have a robust launch schedule without fixed dates.

65Q: Are teammates allowed to record or stream the competition to the remote portion of the team?

65A: Yes! But still comply with the rules in the Guidebook.

64Q: We understand that all team members in the MCC cannot contact outsiders during competition attempts. Will all five team members be in the MCC during their team's attempts?

64A: No. That information will be provided at the event.

63Q: Is it possible to get a CAD model of the sieve and/or arena? We would like to see more specific details associated with the 80/20 frame around the sieve in order to plan for mounting our beacon to the front of the sieve.

63A: Will the following and the graphic work for the team?

cannot be) used to brush on a wall, or any other surface, as a collision avoidance sensor allowed? In other words, if the switch doesn't violate section 8.4.1, is it allowed? This switch would be used to calibrate a component on the robot to prohibit it from moving out of its range of motion and damaging the robot. Additionally, this component cannot be used to violate 8.4.1.

60A: Please proceed!

59Q: In reference to the U.S. citizenship requirement to attend the on-site competition: Can you provide justification for only U.S. Citizens being able to attend the in-person Lunabotics competition this year?

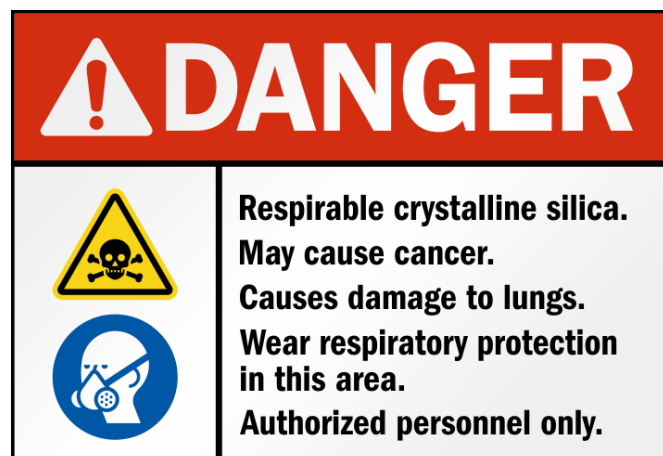
59A: Please see FAQ 54.

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FAQ's – Rev 10 – 02.11.2022

58Q: Several inquiries on this subject listed in the Guidebook Ver 3 – 01.28.2022, Section 9.1.e. "Our personal beliefs do not allow us to shave our faces"

58A: Without exception, the use of any respirator (N-95 masks and/or tight-fitting negative pressure respirators, etc.) shall require a clean, shaven face. No facial hair shall be in contact with any part of the mask/respirator in order to maintain the seal. Address any safety concerns to the RoboPit Chief immediately. There is no waiver to this requirement.



The requirement for personal protective equipment (PPE) is to protect the individual from the inherent dangers of crystalline silica (from the crushed lava basalt aggregate). There are very few options, but the best choice would be for the individual to purchase a hooded powered air purifying respirator (PAPR) – especially if they intend to stay in a career that requires the occasional use of PPE. This requirement exists for the safety of the participants. Whatever respirator is selected, it must be NIOSH-approved. [Statement from OSHA – [Under OSHA, an employee cannot sign a waiver in order to be exempted from stated requirements. A release or waiver is not possible for employees. That being said when an employer is looking to accommodate a religious practice, they may have to explore respiratory protection alternatives like helmets or loose-fitting hoods].

57Q: With reference to the newest on-site competition guidance, it was stated that "Only 5 team members will be allowed in each RoboPit at any one time. Other team members must remain outside of the CSE and cannot be wandering the halls of the facility." Is there a limit to the number of team members allowed at the on-site competition?

57A: Yes.

56Q: With reference to the newest on-site competition guidance and FAQ #19: Will spectators (i.e. team members who do not possess U.S. citizenship) be allowed at the competition?

56A: No.

55Q: Section 8.4 Navigation states "Touching or having a switch sensor spring wire that may brush on a wall, or any other surface, as a collision avoidance sensor is also, not allowed." Is an internal switch sensor that is not (and cannot be) used to brush on a wall, or any other surface, as a collision avoidance sensor allowed? In other words, if the switch doesn't violate section 8.4.1, is it allowed?

55A: (Also see FAQ 46) We need more information to answer this question, what is the spirit and intent of the "internal switch sensor?"

54Q: In reference to section 3.2 Eligibility: Under "Students" it is stated that "Only U.S. Citizens can attend the on-site competition at KSC." Does this requirement also apply to the faculty advisor? Our current faculty advisor is not a U.S. citizen, but has permanent residency status. Will this allow them to attend the competition as our faculty advisor?

54A: Yes. Guidebook 3.2 is amended to add the following: Anyone can be a member of a team as determined by the institution (faculty, students, mentors, etc.). Only U.S. Citizens can attend the on-site competition at KSC.

53Q: We need a better understanding of how a navigation beacon can be attached to the sieve, and how the sieve might slide/move during docking with a rover.

53A: The sieve has a handle that when tightened will stop it from sliding on its track. The sieve frame and track are 80/20. The frame 80/20 size is 25mm X 25mm T-Slotted Profile. 80/20 hardware compatible with the 25-2525 profile type may be used to temporarily attach navigation targets to it: <https://8020.net/25-2525.html> Nav targets can also be attached to the vertical PVC pipe uprights that look like goal posts. The goal post design is simple: it is 1.5" id Schedule 40 PVC pipe slid into 5-inch tall, base cylinders made from 2" id Schedule 40 PVC pipe. Total height above the 80/20 slide is 29 inches as shown. No fasteners will be used. Teams may bring their own 1.5" Schedule 40 PVC uprights any length up to 29 inches and drop them in place. There will need to be 5 inches of pipe free to insert in the base cylinders.

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FAQ's – Rev 09 – 02.02.2022

50Q: 8.1.1.1 reads "The lunar robot [shall] have maximum undeployed volume = 1.0 m length x 0.5 m width x 0.5 m height". This differs from Versions 1 and 2 where the maximum undeployed volume was 1.1m length x 0.6m width x 0.6m height. Is this change intended? Our team has already constructed a robot frame that conforms to the larger volume and is not compliant with the new change.

50A: It's a typo – please use 1.1m length x 0.6m width x 0.6m height

49Q: 3.2.2.3 reads "Students who have graduated in the same semester/quarter as this challenge are eligible to be on the team.". Would a student who graduated in the Fall of 2021 be eligible to be on the team/attend competition?

49A: Let's change that to read, "Students shall be enrolled in the current or previous semester/quarter and in good standing with the school. Students who have graduated in the same semester/quarter as this challenge are eligible to be on the team."

48Q: 8.2.2.8 reads "If PPE provisions are limited, the Arena Chief may require staff with PPE to place the robot in the arena". Can teams bring their own PPE to eliminate this possibility, and if

so, can the required level of PPE for arena entry be defined?

48A: No.

Q47: In Section 2 'Competition Deadlines', the dates for Phase III Group 1 have incorrect years, with Vehicle Inspection listed as occurring on May 23, 2023 and Communication Inspection listed as occurring on May 23rd, 2024.

47A: Thanks for the catch! All years are 2022.

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FAQ's – Rev 08 – 12.21.2021

46Q: Can you explain what type of touch sensors are prohibited on the robot? We would like to use limit switches to make internal calculations of our systems, is this not possible in a lunar environment?

46A: We love being challenged! Okay so we cannot list all the types of touch sensors that are prohibited ... too many. However, they are not allowed, but I would ask your team to consider how you would make the touch sensors / limit switches dust tolerant. If you have a possible solution, please resubmit your request and we will consider it. In the meantime, please adhere to Guidebook Section 8.4.1.

45Q: What is the density of both the regolith and dust for the competition?

45A: See Section 12. Black Point-1 (BP-1).

44Q: When coming up with a hydraulic system, do we have to abide by the constraint of things that can be used inside of hydraulics in space?

44A: Yes, yes you do have to abide. Please comply with the rules and rubrics contained in the Guidebook.

43Q: Will the arena be temperature regulated?

43A: Yes, yes it will. The Artemis Arena is located inside Building M6-306.

42Q: Is the robot always going to be oriented in the same direction or location at the start?

42A: Noooooo. See Section 8.3.1

41Q: Could we use Caulk or some other sort of gasket between a chassis or excavation mechanism/any fine space?

41A: It is the teams' responsibility to make this determination.

40Q: Can we use a compass?

40A: Noooooo. See Sections 8.4.1 and 8.4.7

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FAQ's – Rev 07 – 11.19.2021

39Q: I am asking a clarifying question for section 7.2, category 4: Camera bandwidth Use. Is the situational awareness camera referenced here the same camera as the "Lander" camera referenced in Section 7.4 Item 3? Are we permitted to use a camera for our robot's autonomy and not lose these bandwidth points?

39 A: No. Both terms refer to the same camera. We will correct all terms to read as "Lander Camera."

38Q: If the sieve can slide in and out over the BP-1 surface, what prevents it from sliding backwards when a rover pushes against it while docking?

38A: The sieve is a fixed object.

37Q: We were wondering if the rover can attach itself to the collection bin when depositing the regolith.

37A: No. The rover shall NOT be attached to the collection bin. This is not a current off-world protocol that is being considered.

36Q: In the rulebook, it mentions that we will be security checked every time that we are entering the KSC. If we plan on bringing tools or anything else for our rover, what is allowed and what isn't?

36A: Use sound engineering practices and principles as to what you bring to the competition. If there is an issue at Check-In, then a discussion will have to happen with NASA Security.

35Q: Is there a hotel that the competition recommends/hotel where all the competitors will stay at? If so, which hotel and are any discounts provided?

35A: We do not provide information on this subject.

34Q: Can you go further into depth what the rulebook means by "Teams may use honeycomb structures as long as they are strong enough to be safe and the edges sealed to prevent dust intrusion." (Bullet 5 in 8.1 Robot Requirements section) I have provided a photo of the UNL Lunabotics flexible wheel. Do these wheels meet the criteria? Are holes through the wheel acceptable? What are acceptable sealed edges?

34A: We do not comment on "meeting" a design criteria. It is the teams' responsibility to meet the criteria in the Guidebook. A wheel with a large honeycomb structure that is open on both sides is allowed as long as the edges are not so sharp that they would be a cutting hazard.

33Q: If they meet the rulebook criteria, are flexible wheels allowed in the competition?

33A: Yes.

32Q: Are we allowed to use touch sensor on sieve to align?

32A: No. Touch sensors are not allowed on the robot.

31Q: Can you confirm if our faculty advisor needs to attend the competition in May?

31A: Faculty Advisor - The faculty advisor shall be 21 years old at faculty registration, must be currently registered with the institution, in good standing and authorized to represent their institution. The faculty advisor shall attend the on-site competition with the team.

30Q: If we have a main robot system and a secondary support system that is stationary do we need a electric data logger for each system? The secondary system would be attached to the collection bin and considered a 'lander subsystem', probably drawing around 250mA at 5V.

30A: DATA LOGGER - Yes. You need a data logger for every device. SECONDARY SUPPORT SYSTEM – Shall NOT be attached to the collection bin.

~~29Q: Do you know if there will be a limit to the number of people a team can bring to the competition? Otherwise, is this a possibility of happening with covid (Covid-19) restrictions?~~

~~**29A: The number of students that can come to the on-site competition is at the discretion of the Faculty Advisor. At the present time, LUNABOTICS is NOT authorized to have an on-site competition. Teams will be notified of any changes.**~~

28Q: What are some best practices in practicing for the event? One example is the best material to use as lunar regolith simulant (some suggested powdered limestone but that has safety issues).

28A: We do not provide information on this subject. It is the teams' responsibility to make this determination.

27Q: Do outreach events have to be virtual?

27A: It is the teams' responsibility to make this determination. Teams must follow all local, state and Federal (CDC) Covid-19 guidelines.

26Q: What are we allowed to place on the shelf provided in the arena?

26A: The shelf is where teams will place their Wireless router / Access Point (WAP) to communicate with their robot.

25Q: If we choose to bring our own webcam to the arena, where can we place it?

25A: You can bring a camera to the arena, you cannot bring your own webcam into the arena."

24Q: Would like clarification if we can do one event, invite 3 different age groups, and do 3 different activities. Or if needs to be 3 separate activities delivered at different times.

24A: Not too specific, if this is referring to the Public Outreach Report, then "It is the teams' responsibility to make this determination."

23Q: I would be interested to know who won in the past and the design of their robots.

23A: You can see past competition robots by searching on YouTube. You can see a list of past competition winners at <https://www.nasa.gov/content/lunabotics-information>

22Q: 7.3.3 – Is there a difference between the lander cam (mentioned in 7.4.3) and the situational cameras?

22A: No. Both terms refer to the same camera. We will correct all terms to read as "Lander Camera."

21Q: Are Public Outreach events required to be with a school?

21 A: No. You can engage organizations such as (but not limited to): Boys Club, Girls Club, Little League teams, Pony Ball teams, Scouts (Belt Loop/Merit Badges), First Lego League, Odyssey of the Mind, Students with Special Needs ... etc. You may want to go online and see what opportunities are in your K-12 community and remember to follow the rubrics!

20Q: Section 6.3 states: "The report must reflect how the team inspired others virtually to learn about robotics and engineering" and "Develop three quality activities for K-12 classrooms to participate in your virtual STEM experience." However, section 6.3 also states "The report must contain a table for both virtual and in person events that includes each event, age/grade level, and number reached." Are the outreach events that we create, and host intended to be in person or virtual?

20A: It is the teams' responsibility to make this determination. Teams must follow all local, state and Federal (CDC) Covid-19 guidelines.

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FAQ's – Rev 06 - 10.08.2021

19Q: With regards to FAQ #9, are non-US citizens who have green cards or permanent resident status allowed to physically go to the competition in May at KSC?

19A: No.

17Q: Rule "VIII. REQUIREMENTS 8.1.5" states, "Teams may use honeycomb structures as long as they are strong enough to be safe and the edges sealed to prevent dust intrusion". If the honeycomb structure is open on both sides and can easily be blown out would that be allowed (such as a wheel with a large honeycomb structure that is open on both sides)?

17A: A wheel with a large honeycomb structure that is open on both sides is allowed as long as the edges are not so sharp that they would be a cutting hazard.

16Q: When returning any material that is mined, there is a grate for any dust collected to fall through. What size are the gaps that would be in this grate?

16A: The grate is a wire mesh, the openings measure 1/2" x 1/2".

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FAQ's – Rev 05 - 09.30.2021

15Q: Our team was trying to put together a good score to shoot for. But I cannot find the (mining kilograms) points from past competitions.

15A: Here are the top 5 mining results from the last time we had an on-site mining competition in 2018:

RMC: Lunabotics 2018 - Mining		
Rank		Total Gravel (Icy Regolith Simulant) KG
1		5.69
2		4.98
3		4.27
4		2.00
5		0.75

14Q: In past years, the launch volume dimensions of the robot could be oriented in any way (i.e. length, width, height could be defined to be along any of the X, Y, Z axes). Is this still the case for this year's competition?

14A: The Guidebook is silent on this issue. But to answer your question, yes it is.

13Q: With regard to the Project Management Plan, would a title / cover page count towards the 5-page limit?

13A: A cover page is not required, though include your University name on the PMP. If you do include a cover page, it will not count towards the page limit.

12Q: We would like to inquire about the requirements for the kill switch on the robot. In the handbook, it describes using an "unmodified" standard button. Our team would like to make an aesthetic plastic cap to place on top of the button, without removing or changing the functionality of the standard button in any way. Would this be a violation of what was meant by "unmodified" even though it does not change functionality or structure and can be easily removed?

12A: The "Kill Switch" shall meet the requirements in the Guidebook.

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FAQ's – Rev 04 - 09.24.2021

11Q: I have a question about "full-time student" status and what defines full time students

per the guidebook? I could not find any specific number of credit hours. We have few students who are very dedicated and interested in participating but are not enrolled in 12+ credits this semester. They are active members of our Robotics club and will be here until Summer 2022. Will they be able to participate?

11A: Great question! Under the school of thought that we are to look out for each other in these uncertain and interesting times, let's do the following: It up to the school to determine what is a full-time student. It is up to the Faculty Advisor to decide if they want to allow part-time students to participate.

Based on FAQ 11, Guidebook 2022, Section 3.2.1.b. is revised to read as follow:

The team will be comprised of enrolled ~~full-time~~ undergraduate and graduate students. The team must include at least two undergraduate students.

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FAQ's – Rev 03 - 09.21.2021

10Q: What are the COVID-19 restrictions in place?

10A: This is an evolving situation. At the present time, LUNABOTICS is NOT authorized to have an on-site competition. Any changes on this will be published here, in the FAQ's. LUNABOTICS is having a Virtual competition and we are working on and planning to have an on-site competition. The current policies are listed below.

VISITORS

Visitors to NASA facilities still are required to complete a Certification of Vaccination and, beginning Sept. 20, 2021 provide time-stamped proof of a negative COVID-19 test taken within the previous three days.

GUIDE TO FACE COVERINGS/MASKS SEPTEMBER 2021 (CORRECTED COPY)

As a result of several inquiries to both the center director and Kennedy's medical team regarding face coverings, we're providing the following information.

On Aug. 13, 2021 the Centers for Disease Control and Prevention (CDC) updated their guidelines regarding the wear of face coverings or masks called Your Guide to Masks. The guide has information on how to select a mask, special considerations for masking with gaiters and face shields, correctly masking for children and people with beards, and how to correctly wear, remove, clean, and store face coverings.

Regardless of vaccination status, on all federal properties, including Kennedy Space Center, a proper face covering shall be worn over the nose and mouth while indoors (except while eating or drinking where social distancing must be maintained or you are in an office with floor-to- ceiling walls and a closed door) or while outdoors when social distancing cannot be maintained.

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9Q: Can non-U.S. citizens physically go to the competition at KSC in May? (Reference: not found).

9A: At the present time, no. This is a new security issue that is currently under review. Any changes on this will be published here, in the FAQ's. However, anyone can go to the Kennedy Space Center Visitor Complex and view the event as a spectator (<https://www.kennedyspacecenter.com/>).

8Q: 8.4.6 – What is meant by this section? Are we supposed to fill in the blank ourselves?

8A: 8.4.6 is deleted from the Guidebook.

7Q: Our team is requesting clarification on whether the mass limit is 60kg or 80kg.

7A: Section 8.1.1.b is correct as written. The mass limit is 80kg. Section 8.3.4. is changed to read as follows: Each team is responsible for placement and removal of their mining robot onto the BP-1 surface. There must be one person per 20 kg of mass of the mining robot, requiring a minimum of three people to carry the maximum allowed mass of 80 kg. Assistance will be provided if needed.

6Q: We would also like to know what collision detection sensors are allowed in the competition.

6A: The Guidebook is silent on this issue. This is at the discretion of the Team, as long as they comply with the rules and rubrics in the Guidebook.

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FAQ's – Rev 02 - 09.10.2021

5Q: I am asking a clarifying question for the competition event. Do the faculty advisors have to attend the competition?

5A: Each team must be accompanied by an adult age 21 or older serving as the faculty advisor.

4Q: Can the team lead submit the application form, or does it have to be the faculty advisor?

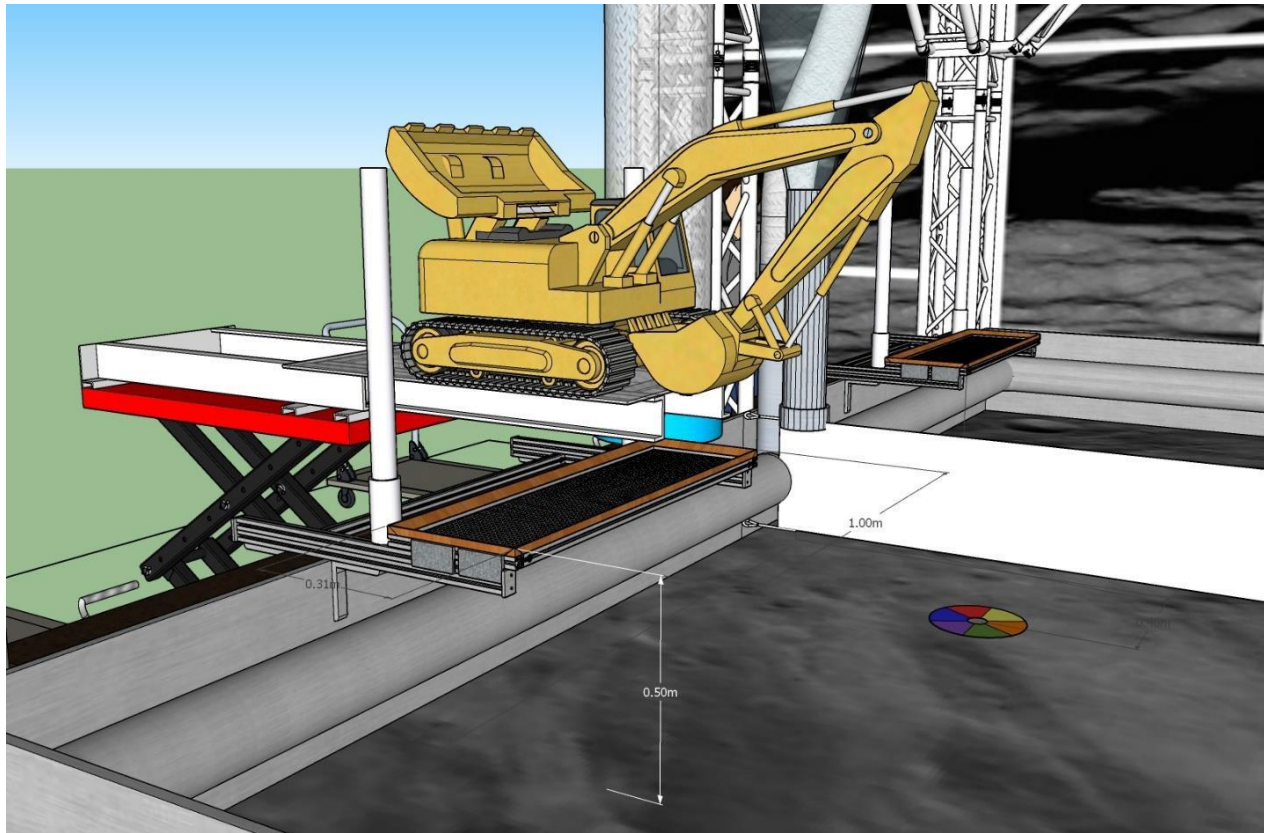
4A: Either the Faculty Advisor or the Team Lead can register the team at:
<https://secorstrategies.submittable.com/submit/1f767a20-6fd1-4032-ab0f-441e6312d517/2022-nasa-lunabotics-team-registration>

3Q: Are undergraduate students who will have graduated approximately two weeks before the competition still allowed to compete? I ask because my university's commencement is before the competition itself.

3A: Yes. Students who have graduated in the same semester/quarter as this challenge are eligible to be on the team.

2Q: It doesn't appear as though a dimension for the deposit location's height off the ground.

2A: The target sieve is 1.0 meter wide by 0.31 meter deep. The top lip of the sieve, as shown, is 0.5 meter off the surface of the regolith.



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FAQ's – Rev 01 - 08.31.2021

1Q: I am emailing to ask if all participating students need to be US citizen for LUNABOTICS competition?

1A: No, they do not need to be U.S. citizens.

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CHANGE 01- 09.24.2021

Attention All Teams:

Registration closed on September 22, 2021 and your response to this Artemis Student Challenge has been magnificent. While NASA is still only able to accommodate 50 teams for the on-site mining portion of the competition, we have decided to allow all registered teams an equal opportunity to participate on site regardless of when they registered. This year the Project Management Plan will serve as the first gateway to the competition. Our panel of judges will evaluate the Project Management Plans from all currently registered teams and down-select to fill the 50 competition slots and 10 waitlist slots based on those submissions.

A good Project Management Plan (PMP) is critical to the success of any project. For LUNABOTICS 2022 the PMP is your key to the competition and it is due quite soon. To maximize your chances of coming on site for this year's competition be sure to read carefully and fully comply with the PMP Rubric in the LUNABOTICS Guidebook. A read of the Systems Engineering Paper Rubric may also provide some insights for developing your PMP.

LUNABOTICS has provided eleven short instructional videos on Systems Engineering (<https://www.nasa.gov/content/systems-engineering-for-university-level-engineering-projects->

[and-competitions](#)), each of which describes some important concepts that will help in the development of your PMP. Good luck, and be sure to submit your PMP by the due date and time.

Teams that are waitlisted must notify us if they wish to remain in the competition, submit deliverables as required and respond to correspondence as needed.

In addition, Guidebook Section 4.3 is removed in its entirety and replaced with Section 4.3 (Rev 1) below:

4.3 (REV 1) - DESIGN IT, BUILD IT, DIG IT CHALLENGE (PHASE I, PHASE II, PHASE III)

1. In Phase I Design It, teams will submit:

- a. The Project Management Plan.

The 50 highest scoring Plans will advance to Phase II. The remaining teams will be waitlisted.

2. In Phase II Build It, teams will submit:

- a. Systems Engineering Paper
- b. Public Outreach Project Report
- c. Presentation and Demonstration (**optional**)
- d. Student Resume (**optional**)
- e. Robot Photo with School Name – (JPEG, front, side and back of the robot).
- f. Proof of Life on YouTube link – this is a video of your robot performing two mining cycles or 5 minutes of continuous operations
- g. Your Robot Data - Provide information about your robot in Google Docs at:
https://docs.google.com/forms/d/e/1FAIpQLSeB3v9iz1LogPW2y1vLgLNIPGSW9Lt6nSRqU9jE3015Cq3C1A/viewform?usp=sf_link
- h. Team Roster - Corrections to NASA generated Team Roster.
- i. Team Roster - Final for clearance by security. No changes after the posted date.
- j. Media Release Forms.
- k. Team Photo w/ faculty (**Virtual Photo**)

Teams successfully completing all Phase II “Build It” requirements will be invited to the Phase III “Dig It” on-site challenge at the Kennedy Space Center in Florida (at the present time LUNABOTICS is not authorized to have an on-site competition. In the event there are any changes, the team will be notified by email and the message will be posted on the LUNABOTICS website).

Remember all deliverables are required unless otherwise stated, teams failing to meet the deadlines will be removed from the competition. Submit all items through the website links. Email submissions or copies are no longer acceptable. Do not wait until the deadline to submit. The Lead Judge’s Decision is Final on this and all competition items.

If you have questions, now’s the time, tomorrow is too late. Communicate – Communicate – Communicate. We realize that we are living in interesting times with the hope that this change benefits all schools.

Good Luck!
From the NASA LUNABOTICS Team

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CLARIFICATION 02 - 09.24.2021

Refer to Guidebook Section 3.2, FAQ 1 and FAQ 9.

It is up to the Faculty Advisor to decide the composition of their team IAW the Guidebook. To attend onsite testing activities, participants must be U.S. Citizens. Any changes to this policy statement this will be published here, in the FAQ's. However, anyone can go to the Kennedy Space Center Visitor Complex and, with a paid admission, view the event as a spectator (<https://www.kennedyspacecenter.com/>).

CLARIFICATION 01 - 08.31.2021

In Section II, Competition Deadlines lists the registration period date(s) and time. Section 3.3 Registration states the competition is limited to the first 50 teams. The registration website will open at the date and time as stated. The website will close when 50 teams have completed registration or at the date and time as stated, whichever comes first. The registration website will be open only during the period listed in Section II, Competition Deadlines. Register your team at: <https://secorstrategies.submittable.com/submit/1f767a20-6fd1-4032-ab0f-441e6312d517/2022-nasa-lunabotics-team-registration>

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~ end of FAQ's ~

